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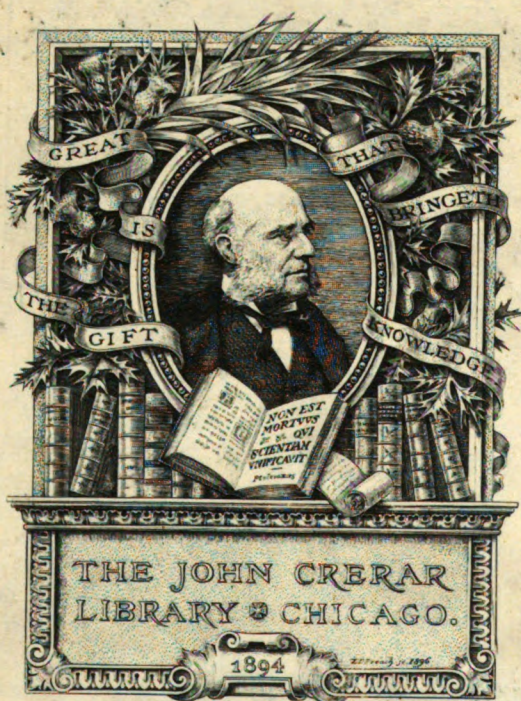
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# THE DINOSAURIA

WITH SPECIAL REFERENCE TO THE  
DINOSAUR OF COLORADO

BY  
S. ROBERT McKELVEY



*Price Seventy-five Cents*

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# THE DINOSAURIA

By S. ROBERT McKELVEY, A.M., M.D.

DENVER, COLORADO



The panorama of the ages presents to the view of man a never-ending stream of interesting phenomena, of which the process of evolution is one great conspicuous feature.

After an immeasurable period of time, the scientist is able to follow certain rays of light leading into the far distant eons of the past, which oftentimes turn mythology into concrete facts. The naturalist directs his mind to remote antiquity, and there revels in an intellectual feast that was prepared when the dewdrops still sparkled like diamonds in the morning of creation.

He who seeks a greater knowledge of primeval times is continually bringing within his field of vision additional rays of light that contribute to the intellectuality of man many marvelous wonders that existed before human intelligence became a factor in the realm of nature.

## FOSSILS

Geology, supported by biology, physics, chemistry, astronomy and geography, leads man among the rocks of the earth and enables him to interpret the records that reveal the history of past ages. Fossils are an important feature in the study of stratigraphic geology. From the beginning of organic life in geologic time until the present era there has been a constant entombment of organized bodies. The reader will scarcely need enlightenment on the many diversified ways in which such entombment has taken place.

The preservation of the entombed organic bodies results in formation of innumerable fossils. These relics of the ages are not uniform as to color, weight, solidity, chemistry, and many other features. The various attributes of a fossil depend very much on the environment of the specimen during the countless ages it may have been hidden in the earth. A specimen approaching nearest to a perfect fossilization contains no trace of animal or vegetable matter. The organic matter has gradually disappeared, a molecule at a time, perhaps, only to make room for a succeeding molecule of iron, silica or other chemical element.

Fossils are not limited to solid bodies, but also include impressions or imprints left in stony formations.

The scientist is able to name, by study of the fossils, the geologic periods in regular order of succession, and also to describe the predominating organic life of each period.

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## PALEONTOLOGY

Fossils furnish the botanist, the zoologist and the anthropologist valuable means for the study of organic life in the geological ages.

The paleontologist, by scientific study of fossils, is able to give a reliable account of organic life from the time of its inception in remote geologic time until it has passed through the stages of evolution and reached the culmination of life, as manifest in the present era.

Fossils symbolize the numerous forms of organic life in geologic time and reveal the constant trend of evolution.

The work of the paleontologist includes the locating and the removing from the quarry the fossil remains of plants and animals of past ages. However, his work does not end here. He takes these ancient relics of time to his laboratory and there examines and classifies them. Many of these fossilized bodies, whose numerous parts have been separated for perhaps countless centuries, are again placed in the natural position in relation to each other. Much time is sometimes necessary in the proper replacing of fragments of these fossils. As an example, many months, or even years, may be required in the collection and the bringing together of the fossil remains of a gigantic dinosaur.

Baron Cuvier, the great naturalist, was the first to establish a system for classification of fossil remains. He died in 1832. It is only since the beginning of his learned career that great progress has been made in the study of paleontology.

## PANORAMA OF THE AGES

In bringing together the numerous fragmentary evidences of prehistoric ages, the naturalist may be reminded of a great panoramic scene passing before him. Had it been possible, during the cycles of geologic time, for a human being to have been where he could have accurately observed biologic manifestations, without in any manner influencing the natural trend of evolution, he would, no doubt, have viewed a most wondrous portrayal of that never-ending stream of progression under the natural laws of the Creator.

The reader may find pleasure in seeing, in his imagination, the strange and wondrous things marching in that great eternal procession of the ages.

"In the beginning" may have included countless eons of geologic time, after which, in the regular order of procession in the great phenomenon, first came the Archaeozoic or Archaen age. Here, it is believed, organic life began. However, if there was life, the form was of a character so low that the great rocks, characteristic of that period, do not reveal any fossiliferous manifestations.

Then came the Proterozoic or Algonkian period, with its low form of organic life, but not so low as to prevent the fact of its presence being chronicled among the rocks, as shown by the very rare fossils of that age.

Next in succession came the Paleozoic age, with its invertebrata, fishes, acrogens and amphibians, indicated by the numerous fossils of that period.

After the Paleozoic came the Mesozoic, the Reptilian age, and for thousands of years reptiles, or animals having some attributes of reptiles, including the dinosauria, were the predominating biologic factors then in supremacy.

Last in this great procession of the ages came the Cenozoic, the age of mammals. The innumerable fossils of this age reveal amazing facts relative to prehistoric terrestrial habitation.

With the exception of the study of Anthropology in the Cenozoic age, the Mesozoic, with the dinosauria, the predominating organic life of that age, is so wonderful as to scarcely be surpassed in interest by anything else in the realm of prehistoric research.

## **STRATA CONTAINING FOSSILS**

Fossil remains of the dinosauria are found only in the Mesozoic. These strange animals began to exist in the Triassic period, and were supreme during the Jurassic and Lower Cretaceous, then waned and finally ceased to exist at the end of the Upper Cretaceous. Each strata, in the order named, produces a distinct chapter in the story of the dinosaurs.

Specialization was taking place and the genera of the Upper Cretaceous were quite different from the genera of the Triassic and Jurassic.

The dinosaurs disappeared at the end of the Mesozoic, apparently, to make room for the early mammals of the Cenozoic.

## **GEOGRAPHICAL DISTRIBUTION**

The habitat of the dinosauria was almost co-extensive with the inhabitable part of the surface of the earth.

Fossil remains of dinosaurs have been found in Europe, Asia, Africa, Australia, North and South America. The Rocky Mountain region is the richest in these fossils.

Recently a large collection of fossil remains of dinosaurs has been discovered near Alberta, Canada.

Wyoming has produced many very valuable specimens, and some very fine fossils have been discovered near Grand Junction, Canon City and Denver, Colorado.

## **NOMENCLATURE**

The nomenclature of the subject in question is rather extensive. Some technicalities must be used in order to get the subject matter properly arranged. However, it is desired to interest all classes of readers and to omit, so far as possible, technical terms that would be of interest only to the naturalist.

The etymology of the word "dinosaur" would lead the reader to believe the animal was a "terrible lizard." The impression thus received may not be quite correct. There are some naturalists unwilling to acknowledge that the dinosaur was a reptile.

Sir Richard Owen, the very eminent English paleontologist and naturalist, originated the name "dinosaur," but died in 1892 without having seen the latest and best fossil specimens.

The first fossils of the dinosauria were discovered in the United States in 1818. At that time the bones found were not known to be of the dinosauria.

The name "dinosaur," or "terrible lizard," must have been sanctioned, not only by Sir Richard Owen, but also by Professor O. C. Marsh and the Rev. H. N. Hutchinson, as drawings by these last two writers indicate that the larger dinosaurs traveled with their bodies on or very near the ground. Rev. Hutchinson has published a picture of a large Brontosaurus, which is a species of dinosaur, showing the animal crawling on the ground. After one has



made extensive research and has seen practically all the known fossil remains of the dinosauria on the Western Hemisphere, it seems absurd to believe that the *Brontosaurus* crawled on the ground.

No one would be justified in speaking disparagingly of the early writers, as they did exceedingly well, considering the amount of material available for examination in their day.

## **CLASSIFICATION OF THE DINOSAURIA**

The order Dinosauria, for convenience, has been, by early writers, divided temporarily into three sub-orders, each having its own peculiar characteristics. These sub-orders are the Sauropoda, Theropoda and Predentata.

The Sauropoda includes the earliest genera of the dinosaurs, the largest of these primeval monsters. Members of this group were herbivorous and in Triassic and Jurassic time.

The Theropoda is the carnivorous group, having cutting teeth. The skeletons are of rather delicate construction, hollow vertebrae and limb-bones; small fore legs, used but little for locomotion; strong, heavy hind legs, and long, heavy tails. Typical specimens are plentiful in the Jurassic of the State of Colorado and the country of Bavaria. Members of this group, including the *Anchisaurus*, *Ceratosaurus*, *Hallopus* and *Compsognathus*, walked or leaped along in much the same manner as kangaroos, but they were not marsupials.

The Predentata group, perhaps the most bizarre of all the dinosaurs, was herbivorous.

The armor-plated *Stegosaurus* of the Upper Jurassic of Colorado and Wyoming, belonged to this group, as did also the formidable horned *Triceratops*, which had a very large head and body. The latter animal was sometimes thirty-five feet in length. This group also included the Ornithopoda, the most birdlike and smallest of the dinosaurs, varying in size from one foot to twenty feet in length.

The best specimens of the Ornithopoda have been found in the Jurassic of Belgium and of the State of Colorado.

## **NATURALISTS**

Comparatively few naturalists have written on the dinosauria.

Professor O. C. Marsh of Yale University achieved more prominence as a writer and paleontologist in relation to the dinosauria than any other scientist. He died in 1899.

Messrs. J. B. Hatcher, W. J. Holland, F. A. Lucas, Elmer S. Riggs and others have written ably and well concerning the dinosaurs.

Unfortunately, most of the small amount of literature available on the subject of the dinosauria is too technical to be enjoyed by the general public, though the writers have shown much learning and ability.

## **LIVING ANALOGUES, OR CONTEMPORARIES**

Examination of the bones of the crocodile and the ostrich show a similarity to some of the bones of certain species of the dinosaurs. Therefore, the crocodile and ostrich may have descended from common ancestral stock, from which also sprung the most primitive dinosaurs in the beginning of the Triassic period, the earliest part of the Mesozoic.

## PROCREATION

Much uncertainty exists among naturalists relative to the procreation of the dinosauria. It is not known definitely whether any species of these strange animals laid eggs.

Professor O. C. Marsh examined fossil remains of a dinosaur, about two feet in height and seven feet in length, which, on account of the deficiency of ossification of the bones, and when found, being surrounded by fossil remains of a very large dinosaur, was believed to have been foetal.

## DIMENSIONS

The smallest known dinosaurs were perhaps not larger than a medium-size hen. The maximum size of the larger varieties was so great as to be almost unbelievable, without having first seen the original fossil specimens.

Of all terrestrial creatures, prehistoric or otherwise, of which man has knowledge, the dinosaurs are acknowledged to be the largest.

The fossil remains of perhaps one of the largest known dinosaurs are now in the Paläontologisches Museum in Berlin. This specimen was recently discovered in German East Africa, but the bones as yet have not been articulated. Professor Dr. Janensch of that museum says no reliable statement can be made as to its size.

## GENERAL DESCRIPTION

The more primitive genera of dinosaurs were very different from the genera of a later period. Including all genera, the dinosaurs are credited with being the most bizarre of all animal creation since time began.

The fossil remains of these animals give evidence of so many varieties that it is impossible to give a detailed account of each in this article.

Although some species of dinosaurs were probably semi-aquatic, the legs of all were made to travel on land.

Locomotion of some varieties was bipedal, the fore legs being very small and the tails so large and powerful as to be used with the hind legs to form a sort of tripod-support when the animals desired to reach high in the air for observation or for obtaining food in high places.

The carnivorous varieties had teeth for masticating animal food, and larger heads, except in case of the herbivorous *Stegosaurus* and *Triceratops*, the latter one, especially, having a head of extraordinary size.

The Sauropoda, including the *Atlantosaurus*, *Cetiosaurus*, *Apatosaurus*, *Morosaurus*, *Brontosaurus*, *Diplodocus* and *Bracheosaurus*, were the earliest and largest of the dinosaurs.

There was much similarity among the varieties of the Sauropoda. They all had exceedingly small heads, very long necks, extra long tails, huge bodies, large, heavy bones, fore and hind legs nearly equal in length, plantigrade feet, often one yard in width, with five toes to each foot. The smallness of the head indicates a very low degree of intelligence.

## HABITS

The largest varieties of dinosaurs evidently possessed very sluggish habits and probably were poor fighters. The weight of one of these gigantic primeval monsters was sufficient to crush the life out of any other animal that ever existed, but it probably had no method of utilizing this feature of its power.

There seems to be no evidence of belligerency among the dinosaurs, except in case of the carnivorous variety and the Stegosaurus and Triceratops. The Triceratops was probably the most formidable animal that has ever existed. Were a Triceratops of the largest size in existence today, it could probably send the largest elephant to its eternal rest in less time than it takes to chronicle the conjecture.

The largest varieties of the dinosaurs dwelled generally in marshes and evidently ate largely of tender plants and leaves in or near bodies of water.

As these monsters were so much of the time near water, it is quite probable they were often in the water. With so long a neck and so small a head, one of these creatures, in time of danger, could no doubt easily inundate its entire body except the head, and remain unnoticed as long as desired.

On account of their ponderous bodies, it is very probable many dinosaurs sank into the mire so deeply as to be unable to extricate themselves, and thus met death. This theory is supported by the fact that most fossils of these strange creatures have been found in or near places once under water, but now high and dry as a result of geologic changes.

It has been millions of years since the last dinosaur must have come to its death. Our arid plains of today, in many instances, occupy places that were covered by lakes and rivers during the life of the dinosauria. When dinosaurs lived, the Rocky Mountains did not exist.

## MUSEUMS CONTAINING SPECIMENS

The museums having the largest and most valuable collections of fossils of the dinosauria are the American Museum of Natural History in New York City; Wyoming University Museum, in Laramie, Wyoming; Peabody Museum of Yale University; United States National Museum, in Washington City; Carnegie Museum, in Pittsburg; and Field Museum of Natural History, in Chicago.

Only a few of the numerous specimens in the various museums can be mentioned here.

The American Museum of Natural History has more material than any other. Here may be seen a large collection of fossil bones recently discovered near Alberta, Canada. At this institution is a restoration of a large Stegosaurus on exhibition.

The Carnegie Museum has a fine specimen of the right hind leg of a large Brontosaurus that was discovered by Dr. J. L. Wortman in the Jurassic of Wyoming.

The Field Museum of Natural History has a fine fossil specimen of the Triceratops, discovered near Butte, Montana, in 1904.

The U. S. National Museum has much valuable material stored away for lack of space in which to place it on exhibition. The fore legs and shoulders of a large Brontosaurus may be seen here. Other parts of same animal are stored for need of room to exhibit them. Here also may be seen the almost complete fossil remains of a Stegosaurus, or armored dinosaur, discovered in 1885, near Canon City, Colorado, by M. P. Felch. This armored monster was over twenty feet in length.

The Peabody Museum of Yale University owns the large and valuable collection left by the eminent naturalist, Prof. O. C. Marsh. This collection includes the numerous specimens discovered by the assistants of Prof. Marsh. In this museum may be seen the left thigh bone of an Apatosaurus. This specimen is six and one-half feet in length, three feet around the shaft, and

weighs five hundred seventy-five pounds. The estimated length of this animal is seventy-five feet. The fossil was discovered by Mr. A. Lakes, in 1878, at Morrison, Colorado, a few miles west of Denver.

The fossil remains approaching nearest to a complete skeleton of a dinosaur, so far discovered, may be seen in the Peabody Museum. These remains are of a Brontosaurus, sometimes also called a "thunder saurian." For lack of space, only part of this specimen has been placed on exhibition. This animal was at least sixty feet in length, fifteen feet in height at hips, and in life weighed over twenty tons. This very valuable specimen was discovered near Lake Como, in Wyoming, by Mr. W. H. Reed.

The Wyoming University Museum in Laramie has one of the finest collections of fossil remains of the dinosauria known. The existence of this valuable and extensive collection is due to the energy and perseverance of Mr. W. H. Reed, instructor in Geology, and Curator of the museum. He also had a part in the discovery of much of the valuable material left to Yale by Prof. Marsh.

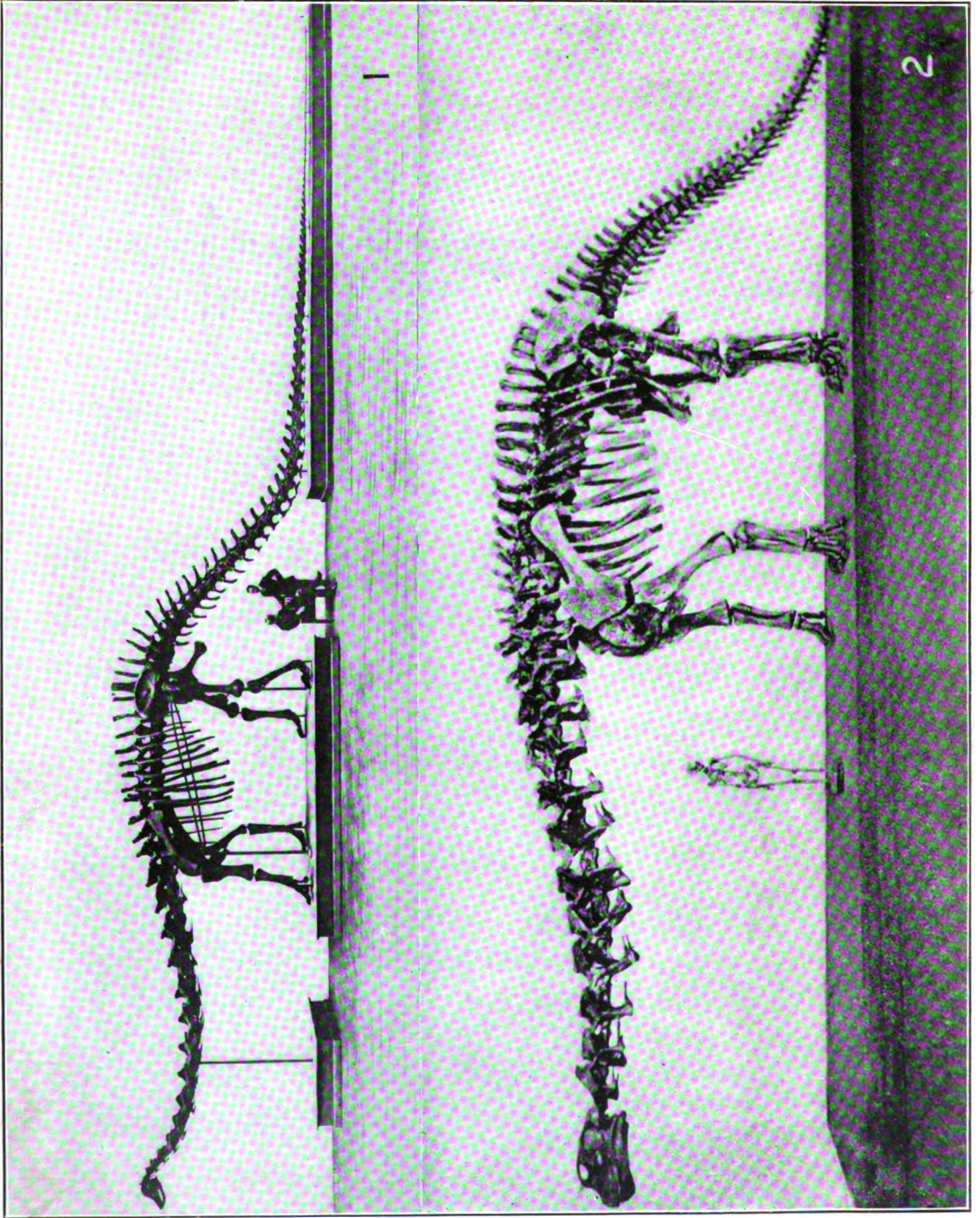
In the collection at Laramie may be seen numerous valuable specimens discovered near Canon City and Denver, Colorado, and in various parts of Wyoming. In this museum Mr. Reed is now (1914) placing in position the fossil bones of a Morosaurus which he discovered in Wyoming. This skeleton, practically complete, is seventeen feet in height and seventy feet in length.

## INDIVIDUAL DINOSAURS

An account of a few of the most important known individual dinosaurs will be of special interest.

The cuts accompanying the account here given, except the cut of the living animal, are recent, taken from the originals, and are absolutely correct.

After extensive research, the cut of the living animal, which is based upon the original fossil frame, is here produced as the latest and perhaps the most accurate illustration in existence of a living dinosaur.



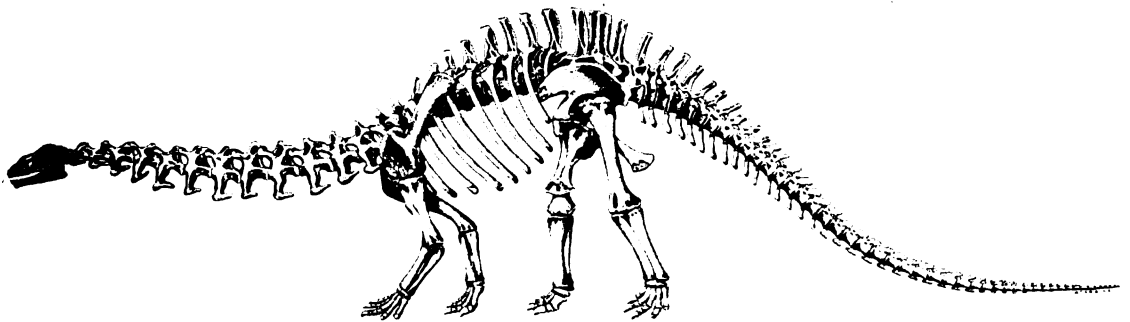




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U. S. NATIONAL MUSEUM

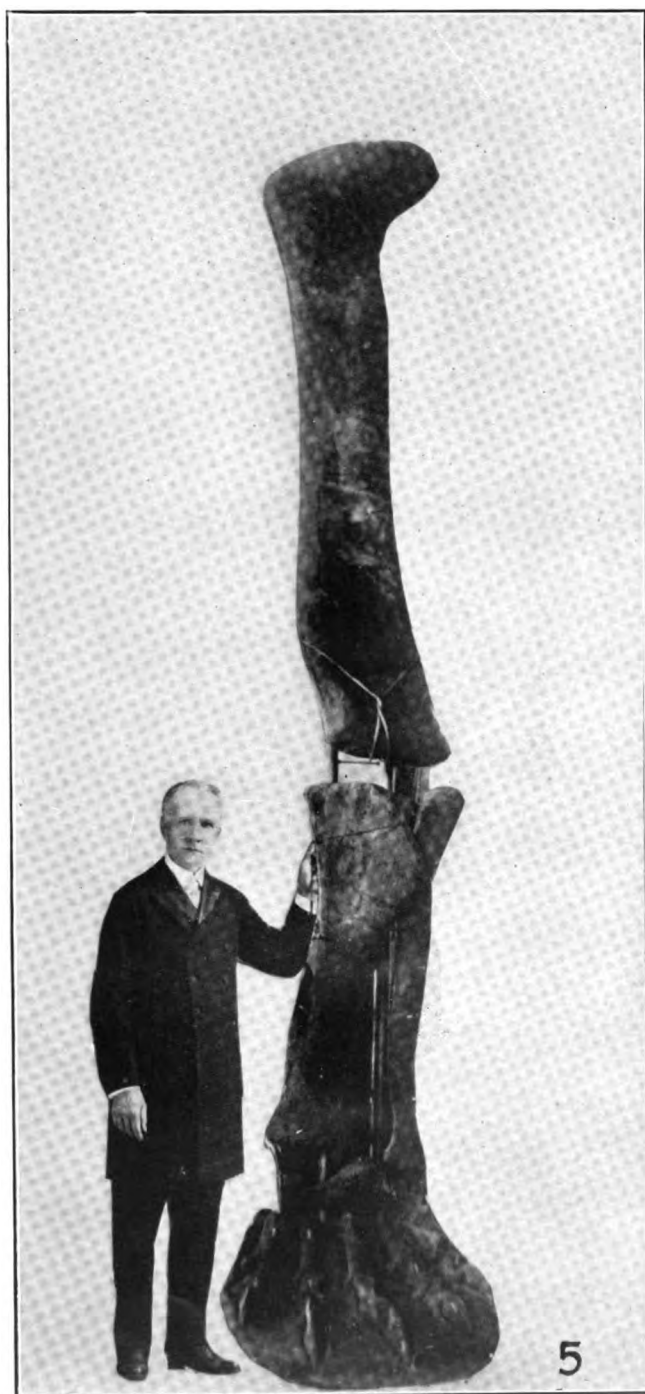
SENIOR PLATE 10



Preliminary figure, skeleton of *Spinosaurus*, one foot, with natural size

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### FIGURE 1

This giant specimen, thirteen feet in height and seventy-nine feet in length, is the fossil remains of a *Diplodocus*, in the Carnegie Museum. This skeleton is somewhat composite; the greater portion consists of the remains of a single individual found in the Jurassic beds in Albany County, Wyoming, by an expedition sent from the Carnegie Museum in the summer of 1899. This was supplemented by portions of another skeleton discovered in the same quarry in 1900. The skull is a reproduction founded on parts of original skulls in the Carnegie and U. S. National Museums. The forefeet and part of the chevrons are reproduced from original material in the American Museum of Natural History. The tail is taken from the skeletons of three different individuals. A few of the vertebrae were articulated and in proper position when discovered. Authorities assert that the tail may have been rather longer than shown by the mounted specimen. There is in the Gallery of Reptiles in South Kensington, London, a reproduction of this noted specimen that was presented to the British Museum by Andrew Carnegie May 12, 1905. This herbivorous beast had its day in the Mesozoic times, millions of years ago. The Carnegie Museum kindly permitted use of the photograph here shown.

### FIGURE 2

*Brontosaurus*.—Fossil remains in American Museum of Natural History in New York. This museum kindly offered the use of the photograph of this magnificent specimen, to be used in connection with this article. The skeleton is sixty-six feet and eight inches in length, fifteen feet and two inches in height. About two-thirds of this specimen are original fossil bones; the remainder is a reproduction. The petrified femur weighs five hundred and seventy pounds. The animal when living must have weighed over forty tons. The adult human skeleton in cut gives an idea of the comparative size. This specimen was discovered at Medicine Bow, Wyoming, in 1898. Mounted 1905.

### FIGURE 3

This is a portion of the remains of an *Apatosaurus* in the Field Museum of Natural History in Chicago. The specimen, as shown, is thirty-two feet in length, and if complete would be about seventeen feet in height and seventy feet in length. The femur alone is about six feet in length. Some of the bones were protruding from the hillside when discovered in the fall of 1900, in the Grand River Valley, opposite Fruita, Mesa County, Colorado, by Mr. Elmer S. Riggs, in charge of the Field Columbian Paleontological Expedition. The remains were not removed until the spring of 1901.

### FIGURE 4

This cut shows how Figure 3 would appear had the entire skeleton been found.

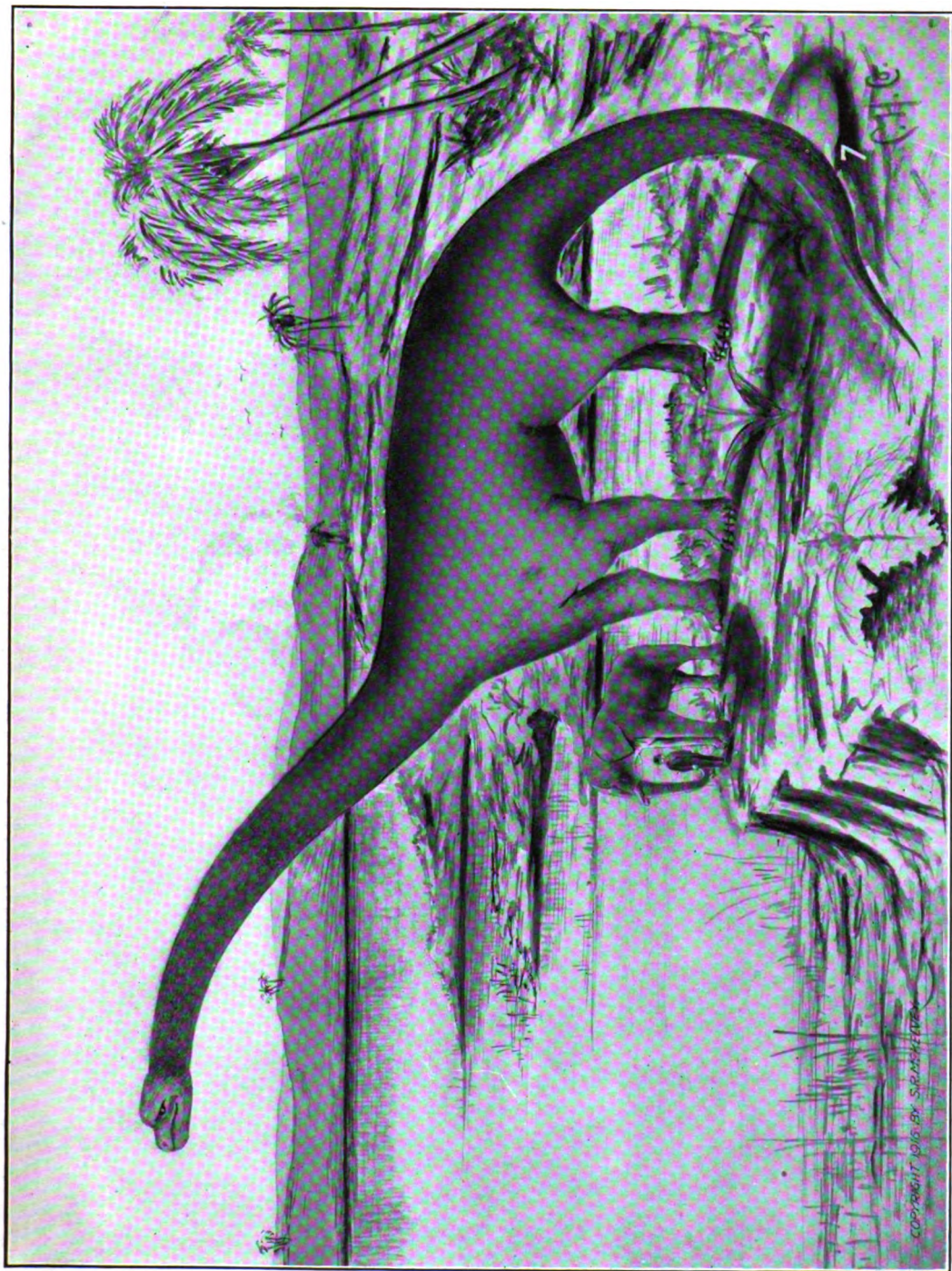
### FIGURE 5

This is part of the remains of a *Brontosaurus* in Wyoming University Museum, and is one of the most wonderful specimens known. Unfortunately, the complete skeleton was not found. In addition to the right hind leg and foot, shown in the cut, there are also in the museum a few ribs and many vertebrae of the same animal. The ribs are six feet and nine inches in length, and the vertebrae are nearly eighteen inches across the centrum, and, measured across from points of the processes, the vertebrae are about thirty-six by fifty-six inches. The fossil femur is about six and one-half feet in length, and weighs fourteen hundred pounds. This animal had five toes to each foot, and the foot, as shown, is three feet in width. The mounted portion of the remains is twelve feet and three inches in height. An idea of the comparative size and height may be had by noting the small cut of a man, five feet and ten inches in height, standing by the fossil. This animal in life must have been approximately twenty-four feet in height, one hundred and twenty-five feet in length, and weighing about ninety tons. This great specimen was discovered in the summer of 1904 near Little Wagonhound Creek, Carbon County, Wyoming, by Mr. W. H. Reed, who kindly assisted in securing a photograph of this great fossil specimen.









THE DINOSAUR OF COLORADO



### FIGURE 6

**Bracheosaurus.**—This is a part of the fossil remains of a *Bracheosaurus* in the Field Museum of Natural History in Chicago. Only the right femur and humerus are shown in the cut. The man is shown standing between the two bones to give a better idea of the comparative size. The two bones are practically of the same length, six feet and eight inches. The shaft of the femur has a greater diameter and was found in a better state of preservation than the humerus. The greatest breadth of the proximal end of the humerus is nearly twenty-six inches. Some of the ribs are nine feet in length and eight inches in width. The great vertebrae are proportionately large. When discovered, the vertebral spines were pointed downward and the sacrum, ilium and anterior vertebrae were exposed, having suffered more or less damage from weathering. This animal lived on succulent vegetation. Its favorite dwelling place is believed to have been in the marshes. The discovery of the fossil remains of this largest known individual dinosaur was made in 1900 near Fruita, in Grand River Valley, Colorado, by Mr. E. S. Riggs, in charge of the Field Columbian Paleontological Expedition.

### FIGURE 7

**Dinosaur of Colorado (*Bracheosaurus*).**—This cut is based on the fossil remains of a dinosaur described by Figure 6, and is believed to be a very fair representation of the living animal when it came to its death over four million years ago at a point two hundred miles west of where the city of Denver now stands. The figure of a medium sized man is shown standing near the animal for the purpose of showing comparative size. This cut represents the largest known individual terrestrial animal. It was approximately thirty feet in height at the shoulders, one hundred and forty feet in length, and must have weighed about one hundred tons. It lived in the Jurassic of the Mesozoic age, and may have been a dominating character among thousands of others almost as large.

The earth must have trembled beneath the tread of this gigantic primeval monster.

# THE DINOSAUR OF COLORADO

(*Bracheosaurus*)

(See Figure 7)

By S. ROBERT McKELVEY, A.M., M.D.

DENVER, COLORADO

Marvelous, indeed, have been many discoveries in recent years, but in the realm of prehistoric research, nothing has been so remarkably astounding as the finding of the primeval monster which I have attempted to describe.

Prior to this article I have written more at length on "The Dinosauria," and have also taken photographs of some of the most noted fossils after having examined practically all the known fossil specimens of the dinosauria on the Western Hemisphere, but until recently, with exception of a very brief technical description of certain parts, there has not been given to the world any authentic account of this, the largest known dinosaur that has yet been discovered.

Before giving details of the actual discovery of the remains of the largest known terrestrial animal that has ever existed since the creation of the world, the interest of the reader may be greatly augmented by a brief account of that section of the country wherein my story has its beginning.

## THE AMERICAN JUNGLE

The wildest place on the Western Hemisphere is within a strip of territory, fifty miles wide in the extreme western part of Colorado, beginning at the southern border of the State of Wyoming and extending south, a distance of one hundred miles to Grand River Valley. In traveling through this region from north to south, you pass over or near by Diamond Peak, Vermilion Bluffs, Mt. Cullom, Zenobia Peak, Escalante Hills, Midland Range, Tank Peak, Pinon Ridge, Cathedral Bluffs, Rabbit Hills and Little Book Cliffs, all belonging to the Rocky Mountain Range. On the same trip you would in regular order cross the Green, Bear, and White rivers. There are but few human beings within this territory. Although this region has not been fully explored, it is known to contain wonderful fossils, petrified specimens and vast mineral deposits, including gold, silver, lead, copper, zinc, iron, coal and other minerals.

There are in the same region, perpetual streams of water, clear as crystal, dashing along from great heights, over large stones and each stream following the course of one of the thousands of wonderful arroyos. These streams receive here and there additional supplies from the numerous hot and cold mineral springs, containing iron, sulphur, soda, magnesium, radium and other chemical elements.

Also, in this, the most noted wilderness of America, abounding in strange phenomena, may be seen hundreds of wild horses, and herds of elk, deer, antelope and mountain sheep. The wolf, the wild cat, the cougar or American

lion, the black bear, the brown bear and the silver tip or grizzly bear (*Ursus horribilis*), the most formidable native animal now on this continent, all have a habitat in this great American jungle. The extreme wildness of this place is evinced by the constant growls, screams and snarls of the most ferocious wild beasts.

In contemplation of such a wilderness as this, the naturalist thinks of its possible relation to remote antiquity, and therein becomes greatly interested. It is strange and peculiarly fitting that nature during the long succession of the centuries, has protected and maintained this heterogeneous rendezvous of the friendless creatures of the wilderness, apparently as a sentinel over the grave of the largest animal that ever trod the face of the earth.

## THE DISCOVERY

Individuals and companies of men have searched throughout the Rocky Mountain region for gold, silver and other minerals. Men have gone forth to trap, hunt and kill the dangerous beasts of the forest. However, it remained for men of learning and special knowledge of stratigraphic geology to enter the arena of scientific investigation and search for the fossils of animals known to have lived in remote geologic time.

It was in the year 1900, Elmer S. Riggs at the head of the Field Columbian Paleontological Expedition, while exploring Grand River Valley, Colorado, at the southern extremity of the wilderness of which I have given an account, discovered the fossil remains of a *Bracheosaurus*, representing a particular species of the dinosaurs. He found many large and small fossil bones, broken and unbroken. The fossils and fragments were carefully removed from the quarry, prepared for shipment and sent to the laboratory of the Field Museum of Natural History in Chicago.

It was not until after the discoverer had devoted much time and study to these fossil remains that he was able to declare positively that this animal was a *Bracheosaurus*, a distinct variety of the dinosauria.

The great importance of this discovery was apparently not realized until recently. The discovery of the remains of this gigantic monster is known now to be one of the most remarkable events of modern times.

## THE TOMB

The grave of this monster was found in the Grand River Valley about two hundred miles west of Denver, Colorado. It was occupied by the remains of the largest, the most grotesque, and the most spectacular monster that ever had existence since time began.

Although this tomb, decorated by the native columbine, is in the shadow of the Rocky Mountains, it was before these mountains were in existence that the occupant met its fate which is prescribed by the immutable laws of nature for all living creatures.

The inhumation of this great monster of primordial times, except in case of geologic changes, remained undisturbed during millions of years and until recently, when it could no longer escape the keen observation of modern science.

## THE MESOZOIC AGE

It was during the Mesozoic Age, one of the main divisions of geologic time, that this strange animal lived. It was an age when the predominating

animal life consisted of large and small creatures, void of hair, unsightly, slimy, hideous. They usually showed some characteristics that indicated their relation to the great family of reptiles.

The crocodiles of the present time are descendants of ancestry of the Mesozoic Age. Fishes with bony skeletons, a few mammals, birds, ferns, palms, and certain other vegetation had a beginning before the end of the age claimed by the reptiles. The Mesozoic Age lasted for thousands of years. During the flight of the centuries, there was a spreading of terrestrial vegetation and atmospheric changes, tending to dryness and a lower temperature. There was also a tendency to elevation and drainage of lands. This resulted in salinity of the sea. All these changes were unfavorable to certain forms of reptilian life of that period. Thus, a cause may be found for the extinction of the dinosaurs with the beginning of the reign of mammals.

## THE PICTURE OF THE BEAST

(See Figure 7)

The appearance of an object is shown by a picture more clearly than by words, but you may wonder how a true photograph of a prehistoric beast can be produced now. I have learned, by examination of nearly all known fossil specimens of dinosaurs, the actual form of these creatures when they were living. The incomplete part of one skeleton may be found complete in another specimen. The artist has drawn the accompanying picture under my directions, and I believe that the picture here shown is the latest and most reliable of all pictures of this variety of dinosaurs.

The utility of this photograph is greatly augmented by adding the picture of the mounted skin of the great African elephant, "Jumbo," which is now in the Barnum Museum at Tufts College, near Boston, Massachusetts. Many readers will remember having seen old "Jumbo," which was perhaps the most famous of all elephants known in captivity, by reason of his great size. He was captured while very young. When three years old and only four feet in height, he was transferred from Jardin des Plantes in Paris to the Royal Zoological Gardens in London, June 26, 1865. In a fit of rage he broke his tusks, which later grew out through his cheeks. He was a great favorite with the children of England for a period of twenty-three years. P. T. Barnum purchased "Jumbo" in 1882 for ten thousand dollars. With great difficulty, "Jumbo" was put aboard a steamer and brought to America. This noted elephant was killed by a locomotive, while crossing a railroad at St. Thomas, Canada, September 15, 1885. At the time of his death he was twelve feet in height at the shoulders, eighteen feet around the body, over eleven feet around the smallest part of the neck and weighed seven tons.

The man shown in the picture is five feet and ten inches in height.

The extraordinary size of the Dinosaur of Colorado is readily recognized by comparing its picture with the photographs of the two smaller objects.

By the aid of the picture the reader will see that this prehistoric monster had a very small head, very long neck, huge body, very long, heavy tail tapering to a point, four rather straight, long legs, very large feet with five toes to each foot, and the height at the shoulders very little greater than at the hips.

This distinguished creature had a very small brain, a low degree of intelligence, sluggish habits; was prone to dwell in marshy places or near bodies of water; ate largely of tender vegetation. It had a very thick, tough, dark skin, without hair. By reason of the strange anatomical outlines of the

dinosaurs, they are acknowledged to be the most bizarre and outlandish in appearance of all animal creation since time began. These creatures once existed in large numbers, and great herds traveled along water courses and through swamps. The movement of these herds must have presented the most spectacular and awe-inspiring sight imaginable.

### **SIZE**

In order to give credence to this story, it is almost necessary to see the original fossils. "Jumbo" could have walked under the body of this dinosaur and neither of them would necessarily have touched the other.

A ferocious beast, forty inches in length, would have been entirely hidden had it been placed under one foot of this monster. The thigh bone of this creature is six feet and eight inches in length. The largest bone of the fore leg is about the same length as the thigh bone. Some of the ribs are over nine feet in length and over eight inches in width.

Incredible as it may seem, this dinosaur was approximately thirty feet in height at the shoulders, one hundred forty feet in length, and must have weighed over one hundred tons.

### **AGE OF THE BEAST**

How old was this monster of remote geologic time? This question cannot be answered definitely, but there are certain facts upon which a rational conclusion may be based.

The great size and perfect fossilization are indicative of great age. The crocodile continues to grow during its entire life and lives one hundred years or longer. There are reasons for believing that the crocodile and the dinosaur came from common ancestral stock in the early part of the Jurassic of the Mesozoic Age. Therefore, it is very reasonable to surmise that the dinosaur continued to grow during its entire life. Some dinosaurs of this genera are known to have been about four feet in length at time of birth.

After carefully considering the many known facts, as regards these strange animals, I am of the opinion that this distinguished Dinosaur of Colorado was a king among creatures of his kind for a period of two or three thousand years.



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